# Clean Ocean Action

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*Ocean Advocacy Since 1984*

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January 19, 2010

Debra Hammond, Chief
Water Monitoring and Standards
Bureau of Water Quality Standards and Assessment
PO Box 409
401 East State Street
Trenton, New Jersey 08625

VIA: EMAIL

**RE: Revised Draft 2010 Integrated Water Quality Monitoring and Assessment Methods Document**

Dear Ms. Hammond,

Clean Ocean Action (COA) is a broad-based coalition of 125 conservation, environmental, fishing, boating, diving, student, surfing, women's, business, service, and community groups and also represents concerned citizens and businesses. Our goal is to improve the degraded water quality of the marine waters off the New Jersey/New York coast. The Integrated Water Quality Monitoring and Assessment Report is an important resource that documents the water quality status and trends in New Jersey and identifies water quality impairments, which then require action by state agencies to reduce impairments. The Methods Document for this report is critical for the report's reliability and credibility, because the document establishes how data is compiled and assessed.

**We are encouraged that some of the public comments have been responded to in this revised draft. However, many of our previous comments were not addressed, and we have several additional concerns and recommendations as indicated below. Comments are listed according to the Document's sections.**

**Section 3.1 Data age**
The change in the last sentence of this section from "*may disregard data*" to "*may apply less weight to data less than five years old if newer data was collected or analyzed using scientific methods that are more precise*" is an improvement. Please note that "and/or accurate" should be added to the end of this sentence, as new scientific methods may also provide more accurate data.

**Require collection dates**. COA previously had called for this serious omission to be addressed in commenting on the draft 2008 Integrated Report, stating "**the data age referred to in the past report as only "the most recent five years of readily available data" is neither clear nor sufficient**." We did notice that the final 2008 Integrated Report had a column apparently added to Appendix E, titled "Time Period", and provides the years

when each data source was collected, which was improvement over no information on data collection dates. We suggest adding a sentence to this section and requiring specific dates in the report:

> "The Integrated Report must document the specific data collection dates for data used in the assessments."

**Section 3.1 Quality assurance**

We support the change to require QAPP approval prior to sampling.

**Section 3.2 Narrative Water Quality Criteria**

It is very disappointing that the extension of the nutrient narrative criteria to marine waters was not included in the April 2009 proposed amendments to the state's Surface Water Quality Standards so that it could have been adopted and included in this revised Method Document. In December, the state did issue *Proposed Amendments: N.J.A.C. 7:9B-1.4, 1.5 and 1.14 Surface Water Quality Standards Nutrient Policies* that finally do propose to extend the narrative water quality criteria to marine waters, which we support.

We understand that the Department is working with EPA and Rutgers to develop indices that will support the assessment of the proposed nutrient narrative criteria.

If the ocean benthic index is developed before the fall, it would be useful to incorporate it into the 2010 report and this Methods Document. However, it is more important that the index is carefully developed with a strong scientific basis than rushed to be included in this report.

To re-emphasize previous comments we have made on the 2008 303d List of Impaired Waters and the Nutrient Criteria Enhancement Plan, we again call for a multifaceted assessment method that draws on several symptoms of eutrophication to determine the overall eutrophic condition for both state estuaries and ocean coastal waters.[1,2] We recommend that NOAA's Assessment of Estuarine Trophic Status (ASSETs) be used as a basis for these assessments. While it may not be possible to test for all of the ASSETs symptoms such as seagrass loss that are specific to estuarine areas, chlorophyll levels and nuisance algal species which are already assessed by the Department could be included for assessments of ocean areas.

The current lack of assessment of impairments to marine waters must be recognized in the revised Methods Document and the Integrated Report. We strongly recommend that the following be added to the end of the first paragraph of the section "Narrative Water Quality Criteria" that states, and if possible provide further updates:

> "*As of January 2010, there are no narrative nutrient criteria for marine waters. In December 2009, the state proposed extending the nutrient criteria to marine waters and adoption is pending. Methods to assess the narrative nutrient criteria are in development with Rutgers and EPA. The Department recognizes that this 2010 report will not fully assess or identify nutrient-related impairments in marine waters, other than dissolved oxygen."*

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[1] Bricker, S., B. Longstaff, W. Dennison, A. Jones, K. Boicourt, C. Wicks, and J. Woerner. 2007. Effects of Nutrient Enrichment in the Nation's Estuaries: A Decade of Change. NOAA Coastal Ocean Program.

[2] Bricker, S.B., J.G. Ferreira, and T. Simas, 2003. An integrated methodology for assessment of estuarine trophic status Ecological Modelling 169: 39–60

This statement, or something very similar, must also be included in the 2010 Integrated Report. Otherwise, these waters appear to not be impaired for nutrients, when in fact they have not been assessed.

**Section 3.2 Narrative Water Quality Criteria: Natural Conditions**

The following sentence needs to be amended with the underlined

> *"Data that do not meet applicable SWQS criteria potentially due to natural conditions will be carefully evaluated and data attributed to natural conditions will be explained and supported in the Integrated Report."*

It is important that exceptions for natural conditions be scientifically justified in order to prevent misuse or incorrect application of this type of exception for an impairment.

In addition, it is still unclear how the Department determines (or will determine) when low dissolved oxygen (DO) conditions in marine waters are due to excessive nutrient loadings such as nitrogen or due to "natural conditions". In the 2008 Integrated Report, the Department statement that

> *"The reason for the benthic low DO cell is not known, although summer algal bloom die-off has been implicated by some investigators."*

indicates a need for assessment of this well-documented, long-standing water quality problem. While the ocean benthic index under development will lead to a better understanding of the impacts of low DO on benthic life, how it will help clarify the cause of low DO conditions had not been explained. In addition, how long will the Department use lack of knowledge as an excuse to not act on this problem?

It is well known that nitrogen loadings to coastal waters have increased with human land-based development and the industrial revolution. The shallow bottom waters off the NJ coast have been likely affected by these increases, given the dense populations in the region, the inflow of the Hudson and Delaware Rivers, as well as by the discharge of millions of gallons of treated wastewater every day. Therefore, the nitrogen and carbon concentrations in upwelled waters may not be "natural," and thus upwelling associated low DO cannot be attributed to natural conditions unless there is indeed evidence to support that the concentrations in upwelled waters are the same as they were hundreds of years ago.

**Sections 4.1 Evaluation of Physical and Chemical Data**

COA had previously commented on an Unusual Events section in the Document. The deletion of this section and replacement with "*Transient events*" in the revised Section 4.1 is an improvement in that these events are now further refined, but more specific language and information is still needed. What is a "*very brief timeframe*"? Is a two month shellfish closure due to a sewerline break considered a transient event? COA would argue that this would not be a transient event. In addition, events that are characterized as "Transient" must still be carefully considered and assessed to ensure that impacts are not major and do not have long-lasting effects. If and when a transient event is used to not list an impairment, then this decision needs to be explained and supported in the integrated report.

**Sections 4.1 and 4.3**
**Our previous comments on low flow exemptions appear to have been ignored, so we are reinstating them here as they still need to be addressed:**

**"The low flow exemption for biological impairments is not acceptable (page 22).** "***Disturbed or impaired biota can result from extended drought or other conditions that result in reduced base flow. If biological communities are impaired due to drought-induced, low flow conditions, the impairment will be attributed to natural conditions and the data will not be considered valid for assessment purposes (see Section 3.2).***" **What are the "*other conditions*" that allow for exemptions of impairment? Human activities, such as development, land use changes, dam flow changes, and water withdrawal, can and have changed base-flow conditions as well as groundwater levels in New Jersey according to the USGS.[3] Attributing human-caused, low-flow conditions to natural conditions is not acceptable. Furthermore, ignoring the related impairments would be scientifically unjustified and invalid. How can drought-induced water impacts be differentiated from these human activity-related impairments and be "*attributed to natural conditions*" only?"**

**Section 4.1 Analytical Precision and Accuracy**
This section is incorrect, indicates a disturbing lack of understanding of precision and accuracy, and needs to be rewritten. Precision is correctly defined as "How reproducible a measurement is" where as accuracy is "How close a measurement is to the 'true value'."[4] Both are affected by the analytical method used. Evidently, the section on significant figures in the previous Methods Document was deleted and incorrectly integrated into the accuracy description in this section.

**Section 4.1 Continuous Monitoring**
The Continuous Monitoring section for Dissolved Oxygen (DO) does not clarify the depth of the sampling instruments. Obviously, there is an important difference as to whether DO readings are from surface or bottom waters in non-shallow areas.

Also, an autonomous glider system for assessing coastal waters has been mentioned in past integrated reports for future use in assessing DO. Will this indeed be used in the 2010 Integrated Report as planned?

**Section 4.1 Frequency of Exceedance**
The changes to this section, as a few others, were not noted in the summary proposal. While the changes in this section appear to provide useful clarification, it is inappropriate and unacceptable that not all of the changes to the document were identified in the summary list of revisions. This undermines the trust and ability of citizens to comment on documents.

In addition, this section needs to recognize that when only the minimum dataset of 8 samples is available, one exceedance should be carefully examined and in certain cases may be sufficient to determine impairment or at least result in a higher sampling frequency and/or additional investigation.

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[3] http://nj.usgs.gov/special/ecological_flow/ and http://water.usgs.gov/wid/html/nj.html#HDR0
[4] http://www.sciencedictionary.org/chemistry-term-details/Precision and http://www.sciencedictionary.org/chemistry-term-details/Accuracy Accessed on Dec 29, 2009

**Section 4.4 Assessment of Nutrient Impacts**
This section which focuses on whether phosphorous is the cause of impairment of freshwaters apparently omits consideration of the transport of phytoplankton and/or macroalgae detritus and deposition. We are concerned about the precedence this sets for the assessment of nutrient impacts. Table 4.4 and the section text indicate that a benthic impairment that has a DO exceedance but does not have a DO swing present on site is, therefore, not caused by phosphate. However, it seems plausible, and even likely, that phosphate could support phytoplankton and/or macroalgae photosynthesis at an upstream location. This organic matter could then be transported downstream where it could smother the benthos or decompose reducing DO levels and cause impairments. Yet, because of the lack of DO swing at the downstream site, this area would be incorrectly determined to be not caused by phosphate.

**Section 5.0 Modeling and Sampling Results**
It is unacceptable to delist a waterbody, or assessment unit, based on modeling results alone. While modeling is a useful tool for determining threatened status and increasing understanding of water quality dynamics, compliance with the SWQS criteria must be based on actual sampling data for listing and delisting purposes. As we have commented previously, models cannot account for all environmental variability and should not be relied on exclusively for assessment purposes. However, if modeling data is the only option available, then it must be used only as a protective measure for a waterbody and not for a delisting.

**Section 6.0 Assessment Methods and 6.2 Recreational Use Assessment Method**
According to Section 4.2,

> *"Waters classified as PL, FW, SE1, and SC are assessed for primary contact ("in the water") SE2 and SE3 waters are assessed for secondary recreation ("on the water")"*

based on the November 2009 adoption of water quality standards. Therefore, **Table 6** and **Section 6.2** need to be also updated to reflect these changes.

**Section 6.3 Fish Consumption Use Assessment Method**

**The Department must require the Method Document to specify that contaminants in fish tissue concentrations will be used to assess fish consumption use in the Integrated Report, and the report must include these assessments.** The first sentence in this section is ambiguous as to what or even if the Department will assess fish consumption use for the report:

> *"The Department may use fish tissue concentrations or water column concentrations for bioaccumulative toxic pollutants to assess the fish consumption use."*

This also appears to be inconsistent yet potentially redundant with the first sentence of the second paragraph:

> *"The Department will also evaluate compliance with human health criteria for toxic pollutants expected to bioaccumulate in fish tissue."*

Also, what is the basis for using water column concentrations in place of assessing fish tissue bioaccumulation directly? According to the Department's response in the 2009 Surface Water Quality Standards Readoption,

> *"The current analytical methods are unable to detect DDT at the current water quality criteria,"*

therefore, water column testing for DDT would not be an acceptable alternative to fish tissue testing. In fact, many of the contaminants that have been found to bioconcentrate and/or bioaccumulate in fish are only transient in the water column, but they are still present throughout the food web due to high concentrations in the sediments. It is therefore inappropriate and insufficient to use water column concentrations as a surrogate for fish tissue concentrations.

Why has the following been deleted from this section?

> *"The data collection, risk assessment, and issuance of fish consumption advisories are overseen by the New Jersey Interagency Toxics in Biota Committee (ITBC), a joint effort between the Department and the DHSS. Through the ITBC, research projects are coordinated to monitor levels of contaminants in commercially and recreationally harvested fish, shellfish, and crustacean species."*

Is the Department no longer working with DHSS? Has New Jersey Interagency Toxics in Biota Committee been discontinued given that some pollutants thresholds have been established? Or will this committee continue to work on pollutants that may not have thresholds established for future assessments?

In addition, our previous comments have not been addressed regarding fish consumption: **"The fish consumption use assessments must include polybrominated diphenyl ethers (PBDEs), flame retardants that persist and bioaccumulate similar to polychlorinated biphenyls (PCBs). The National Oceanic and Atmospheric Administration (NOAA) released a report this spring that identified the Hudson Raritan Estuary as containing the highest levels of PBDEs in the U.S.[5] The report also indicates high levels at Long Branch and Shark River stations. NOAA has stated that flame retardants are a major concern to coastal ecosystems and that "*Laboratory studies indicate that PBDEs may impair liver, thyroid, and neurobehavioral development, and the most sensitive populations are likely to be pregnant women, developing fetuses, and infants.*" PBDEs were also detected in all fish tissue samples from 18 different species from the Delaware River Basin and Estuary.[6] The NJDEP must work with the NJ Department of Health through the Interagency Toxics in Biota Committee to include PBDEs for fish consumption advisories.**

**The NJDEP must also account for PBDE contamination levels in shellfish for classifying shellfish harvest areas."**

If the Department is not able or cannot afford to test for flame retardants, can the Department at least warn people about the potential issue based on NOAA's Mussel Watch findings and better coordinate messaging with NOAA?

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[5] NOAA 2009. An Assessment of Polybrominated Diphenyl Ethers (PBDEs) in Sediments and Bivalves of the U.S. Coastal Zone. http://ccma.nos.noaa.gov/about/coast/nsandt/PBDEreport.html

[6] Greene, R. 2007. Polybrominated Diphenyl Ethers (PBDEs) in Fish from the Delaware River Drainage Basin. Abstract and Presentation at EPA's 2007 National Fish Forum. http://www.epa.gov/waterscience/fish/forum/2007/pdf/section2b.pdf

**Section 7.3 Delisting Assessment Unit/Pollutant Combinations**
This is an unacceptable statement:

> *"When an assessment unit is moved from Sublist 5 to Sublist 3 because there is insufficient information to assess compliance with the applicable SWQS criteria, the pollutant will be removed from the 2008 303(d) List (i.e., "delisting")."*

No justification is provided to support this statement. Insufficient information is not a valid reason for moving an assessment unit off Sublist 5. A delisting must be supported by data and explained.

**As commented previously on the 2008 Integrated Report, more information is needed on management actions and the number of years a unit is on the 303(d) list and Sublist 4 and 5 on the Integrated List.**

The revised draft 2010 Methods Document again is not acceptable as is and needs improvement before finalizing. We request a written response to these comments.

Sincerely,

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Executive Director

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